

Appl. Ser. No. 09/913,005
Att. Docket No. 10191/1961
Reply to Office Action of August 8, 2003

Amendments to the CLAIMS:

Without prejudice, this listing of the claims replaces all prior versions and listings of the claims in the present application:

LISTING OF CLAIMS:

1-12. (Canceled).

13. (Previously Presented) A method for determining a speed variable describing a speed of at least one driven wheel of a motor vehicle, the method comprising:

determining variables describing respective wheel speeds of remaining driven wheels of the motor vehicle;

determining an output rpm variable describing a transmission output rpm of a transmission of the motor vehicle; and

determining the speed variable describing the speed of the at least one driven wheel as a function of the variables describing the respective wheel speeds of the remaining driven wheels, and as a function of the output rpm variable describing the transmission output rpm.

14. (Currently Amended) ~~The method of claim 13, further comprising:~~ A method for determining a speed variable describing a speed of at least one driven wheel of a motor vehicle, the method comprising:

determining variables describing respective wheel speeds of remaining driven wheels of the motor vehicle;

determining an output rpm variable describing a transmission output rpm of a transmission of the motor vehicle;

determining the speed variable describing the speed of the at least one driven wheel as a function of the variables describing the respective wheel speeds of the remaining driven wheels, and as a function of the output rpm variable describing the transmission output rpm;
and

determining an output speed variable specific to a wheel plane and describing an output speed as a function of the transmission output rpm;

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wherein the speed variable describing the speed of the at least one driven wheel is determined as a function of the variables describing the respective wheel speeds of the remaining driven wheels, and as a function of the output speed variable describing the output speed.

15. (Previously Presented) The method of claim 14, wherein the output speed variable specific to the wheel plane and describing the output speed is determined according to the equation of:

$$V_{output} = \frac{\pi}{30} \cdot \frac{R_{wheel}}{I_{Diff}} \cdot n_{output},$$

where R_{wheel} is a radius of the driven wheels and I_{Diff} is at least one effective differential ratio.

16. (Previously Presented) The method of claim 14, wherein the motor vehicle has all-wheel drive, and the speed variable describing the speed of the at least one driven wheel is determined according to the equation of:

$$V_{wheelDef} = 4 \cdot V_{output} - \sum_{i=1}^3 V_{wheel_i} .$$

17. (Previously Presented) The method of claim 14, wherein the motor vehicle has one of front-wheel drive and rear-wheel drive, and the speed variable describing the speed for the at least one driven wheel is determined according to the equation of:

$$V_{wheelDef} = 2 \cdot V_{output} - V_{wheel}, \text{ where } V_{wheel} \text{ is a wheel speed of another driven wheel.}$$

18. (Previously Presented) A device for determining a speed variable describing a speed of at least one driven wheel of a motor vehicle, the device comprising:

a first arrangement for determining variables describing respective wheel speeds of remaining driven wheels of the motor vehicle;

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a second arrangement for determining an output rpm variable describing a transmission output rpm of a transmission of the motor vehicle; and

a third arrangement for determining the speed variable describing the speed for the at least one driven wheel as a function of the variables describing the respective wheel speeds of the remaining driven wheels, and as a function of the output rpm variable describing the transmission output rpm.

19. (Currently Amended) ~~The device of claim 18, A device for determining a speed variable describing a speed of at least one driven wheel of a motor vehicle, the device comprising:~~

~~a first arrangement for determining variables describing respective wheel speeds of remaining driven wheels of the motor vehicle;~~

~~a second arrangement for determining an output rpm variable describing a transmission output rpm of a transmission of the motor vehicle; and~~

~~a third arrangement for determining the speed variable describing the speed for the at least one driven wheel as a function of the variables describing the respective wheel speeds of the remaining driven wheels, and as a function of the output rpm variable describing the transmission output rpm;~~

wherein:

the device includes an arrangement for determining an output speed variable specific to a wheel plane and describing an output speed as a function of the transmission output rpm; and

the speed variable describing the speed of the at least one driven wheel is determined as a function of the variables describing the respective wheel speeds of the remaining driven wheels, and as a function of the output speed variable describing the output speed.

20. (Previously Presented) The device of claim 19, wherein the output speed variable specific to the wheel plane and describing the output speed is determined according to the equation of:

$$V_{output} = \frac{\pi}{30} \cdot \frac{R_{wheel}}{I_{Diff}} \cdot n_{output},$$

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where R_{wheel} is a radius of the driven wheels and I_{Diff} is at least one effective differential ratio.

21. (Previously Presented) The device of claim 19, wherein the motor vehicle has all-wheel drive, and the speed variable describing the speed of the at least one driven wheel is determined according to the equation of:

$$V_{wheelDef} = 4 \cdot V_{output} - \sum_{i=1}^3 V_{wheel_i}$$

22. (Previously Presented) The device of claim 19, wherein the motor vehicle has one of front-wheel drive and rear-wheel drive, and the speed variable describing the speed for the at least one driven wheel is determined according to the equation of:

C)
 $V_{wheelDef} = 2 \cdot V_{output} - V_{wheel}$, where V_{wheel} is a wheel speed of another driven wheel.

23. (Previously Presented) A control unit for one of a traction control system and a vehicle-dynamics control system of a motor vehicle for controlling at least one of drive slip and vehicle dynamics, the control unit comprising:

an arrangement for determining a speed variable describing the speed of at least one driven wheel of the motor vehicle, wherein variables describing respective wheel speeds of remaining driven wheels of the motor vehicle and an output rpm variable describing a transmission output rpm of a transmission of the motor vehicle are available to the control unit;

wherein the control unit determines the speed variable describing the speed for the at least one driven wheel as a function of the variables describing the respective wheel speeds of the remaining driven wheels and as a function of the output rpm variable describing the transmission output rpm.

24. (Currently Amended) ~~The control unit of claim 23, A control unit for one of a traction control system and a vehicle-dynamics control system of a motor vehicle for controlling at least one of drive slip and vehicle dynamics, the control unit comprising:~~

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an arrangement for determining a speed variable describing the speed of at least one driven wheel of the motor vehicle, wherein variables describing respective wheel speeds of remaining driven wheels of the motor vehicle and an output rpm variable describing a transmission output rpm of a transmission of the motor vehicle are available to the control unit;

wherein the control unit determines the speed variable describing the speed for the at least one driven wheel as a function of the variables describing the respective wheel speeds of the remaining driven wheels and as a function of the output rpm variable describing the transmission output rpm;

wherein:

the control unit includes an arrangement for determining an output speed variable specific to a wheel plane and describing an output speed as a function of the transmission output rpm; and

the speed variable describing the speed of the at least one driven wheel is determined as a function of the variables describing the respective wheel speeds of the remaining driven wheels, and as a function of the output speed variable describing the output speed.

25. (Previously Presented) The control unit of claim 24, wherein the output speed variable specific to the wheel plane and describing the output speed is determined according to the equation of:

$$V_{output} = \frac{\pi}{30} \cdot \frac{R_{wheel}}{I_{Diff}} \cdot n_{output},$$

where R_{wheel} is a radius of the driven wheels and I_{Diff} is at least one effective differential ratio.

26. (Previously Presented) The control unit of claim 24, wherein the motor vehicle has all-wheel drive, and the speed variable describing the speed of the at least one driven wheel is determined according to the equation of:

$$V_{wheelDef} = 4 \cdot V_{output} - \sum_{i=1}^3 V_{wheeli} .$$

27. (Previously Presented) The control unit of claim 24, wherein the motor vehicle has one of front-wheel drive and rear-wheel drive, and the speed variable describing the speed for the at least one driven wheel is determined according to the equation of:

$$V_{wheelDef} = 2 \cdot V_{output} - V_{wheel}, \text{ where } V_{wheel} \text{ is a wheel speed of another driven wheel.}$$

28. (Previously Presented) A memory element comprising:

at least one of a read-only memory, a random-access memory and a flash memory for use in a control unit of one of a traction control system and a vehicle-dynamics control system of a motor vehicle;

wherein the memory element stores a computer program that is executable on at least one of a computing element and a microprocessor for performing a process for determining a speed variable describing a speed of at least one driven wheel of a motor vehicle, the process including:

determining variables describing respective wheel speeds of remaining driven wheels of the motor vehicle;

determining an output rpm variable describing a transmission output rpm of a transmission of the motor vehicle; and

determining the speed variable describing the speed of the at least one driven wheel as a function of the variables describing the respective wheel speeds of the remaining driven wheels, and as a function of the output rpm variable describing the transmission output rpm.

29. (Currently Amended) The memory element of claim 28, A memory element comprising: at least one of a read-only memory, a random-access memory and a flash memory for use in a control unit of one of a traction control system and a vehicle-dynamics control system of a motor vehicle;

wherein the memory element stores a computer program that is executable on at least one of a computing element and a microprocessor for performing a process for determining a

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speed variable describing a speed of at least one driven wheel of a motor vehicle, the process including:

determining variables describing respective wheel speeds of remaining driven wheels of the motor vehicle;

determining an output rpm variable describing a transmission output rpm of a transmission of the motor vehicle; and

determining the speed variable describing the speed of the at least one driven wheel as a function of the variables describing the respective wheel speeds of the remaining driven wheels, and as a function of the output rpm variable describing the transmission output rpm;

wherein:

*C1
control*
the process includes determining an output speed variable specific to a wheel plane and describing an output speed as a function of the transmission output rpm; and

the speed variable describing the speed of the at least one driven wheel is determined as a function of the variables describing the respective wheel speeds of the remaining driven wheels, and as a function of the output speed variable describing the output speed.

30. (Previously Presented) The memory element of claim 29, wherein the output speed variable specific to the wheel plane and describing the output speed is determined according to the equation of:

$$V_{output} = \frac{\pi}{30} \cdot \frac{R_{wheel}}{I_{Diff}} \cdot n_{output},$$

where R_{wheel} is a radius of the driven wheels and I_{Diff} is at least one effective differential ratio.

31. (Previously Presented) The memory element of claim 29, wherein the motor vehicle has all-wheel drive, and the speed variable describing the speed of the at least one driven wheel is determined according to the equation of:

$$V_{wheelDef} = 4 \cdot V_{output} - \sum_{i=1}^3 V_{wheeli} .$$

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32. (Previously Presented) The memory element of claim 29, wherein the motor vehicle has one of front-wheel drive and rear-wheel drive, and the speed variable describing the speed for the at least one driven wheel is determined according to the equation of:

$$V_{wheelDef} = 2 \cdot V_{output} - V_{wheel}, \text{ where } V_{wheel} \text{ is a wheel speed of another driven wheel.}$$

33. (Previously Presented) A computer program for execution on at least one of a computing element and a microprocessor, wherein the computer program is operable to perform a process for determining a speed variable describing a speed of at least one driven wheel of a motor vehicle, the process including:

determining variables describing respective wheel speeds of remaining driven wheels of the motor vehicle;

determining an output rpm variable describing a transmission output rpm of a transmission of the motor vehicle; and

determining the speed variable describing the speed of the at least one driven wheel as a function of the variables describing the respective wheel speeds of the remaining driven wheels, and as a function of the output rpm variable describing the transmission output rpm.

34. (Currently Amended) ~~The computer program of claim 33, A computer program for execution on at least one of a computing element and a microprocessor, wherein the computer program is operable to perform a process for determining a speed variable describing a speed of at least one driven wheel of a motor vehicle, the process including:~~

~~determining variables describing respective wheel speeds of remaining driven wheels of the motor vehicle;~~

~~determining an output rpm variable describing a transmission output rpm of a transmission of the motor vehicle; and~~

~~determining the speed variable describing the speed of the at least one driven wheel as a function of the variables describing the respective wheel speeds of the remaining driven wheels, and as a function of the output rpm variable describing the transmission output rpm;~~

wherein:

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the process includes determining an output speed variable specific to a wheel plane and describing an output speed as a function of the transmission output rpm; and

the speed variable describing the speed of the at least one driven wheel is determined as a function of the variables describing the respective wheel speeds of the remaining driven wheels, and as a function of the output speed variable describing the output speed.

35. (Previously Presented) The computer program of claim 34, wherein the output speed variable specific to the wheel plane and describing the output speed is determined according to the equation of:

$$V_{output} = \frac{\pi}{30} \cdot \frac{R_{wheel}}{I_{Diff}} \cdot n_{output},$$

where R_{wheel} is a radius of the driven wheels and I_{Diff} is at least one effective differential ratio.

36. (Previously Presented) The computer program of claim 34, wherein the motor vehicle has all-wheel drive, and the speed variable describing the speed of the at least one driven wheel is determined according to the equation of:

$$V_{wheelDef} = 4 \cdot V_{output} - \sum_{i=1}^3 V_{wheeli} .$$

37. (Previously Presented) The computer program of claim 34, wherein the motor vehicle has one of front-wheel drive and rear-wheel drive, and the speed variable describing the speed for the at least one driven wheel is determined according to the equation of:

$$V_{wheelDef} = 2 \cdot V_{output} - V_{wheel}, \text{ where } V_{wheel} \text{ is a wheel speed of another driven wheel.}$$

38. (Currently Amended) The computer program of claim [[33]] 34, wherein the computer program is stored [[on]] at at least one of a memory element and a flash memory.

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39. (New) The method of claim 15, wherein the motor vehicle has all-wheel drive, and the speed variable describing the speed of the at least one driven wheel is determined according to the equation of:

$$V_{wheelDef} = 4 \cdot V_{output} - \sum_{i=1}^3 V_{wheel_i}$$

40. (New) The method of claim 15, wherein the motor vehicle has one of front-wheel drive and rear-wheel drive, and the speed variable describing the speed for the at least one driven wheel is determined according to the equation of:

$$V_{wheelDef} = 2 \cdot V_{output} - V_{wheel}, \text{ where } V_{wheel} \text{ is a wheel speed of another driven wheel.}$$

41. (New) The device of claim 20, wherein the motor vehicle has all-wheel drive, and the speed variable describing the speed of the at least one driven wheel is determined according to the equation of:

$$V_{wheelDef} = 4 \cdot V_{output} - \sum_{i=1}^3 V_{wheel_i}$$

42. (New) The device of claim 20, wherein the motor vehicle has one of front-wheel drive and rear-wheel drive, and the speed variable describing the speed for the at least one driven wheel is determined according to the equation of:

$$V_{wheelDef} = 2 \cdot V_{output} - V_{wheel}, \text{ where } V_{wheel} \text{ is a wheel speed of another driven wheel.}$$

43. (New) The control unit of claim 25, wherein the motor vehicle has all-wheel drive, and the speed variable describing the speed of the at least one driven wheel is determined according to the equation of:

$$V_{wheelDef} = 4 \cdot V_{output} - \sum_{i=1}^3 V_{wheel_i}$$

44. (New) The control unit of claim 25, wherein the motor vehicle has one of front-wheel drive and rear-wheel drive, and the speed variable describing the speed for the at least one driven wheel is determined according to the equation of:

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$$V_{wheelDef} = 2 \cdot V_{output} - V_{wheel} , \text{ where } V_{wheel} \text{ is a wheel speed of another driven wheel.}$$

45. (New) The memory element of claim 30, wherein the motor vehicle has all-wheel drive, and the speed variable describing the speed of the at least one driven wheel is determined according to the equation of:

$$V_{wheelDef} = 4 \cdot V_{output} - \sum_{i=1}^3 V_{wheel_i} .$$

46. (New) The memory element of claim 30, wherein the motor vehicle has one of front-wheel drive and rear-wheel drive, and the speed variable describing the speed for the at least one driven wheel is determined according to the equation of:

$$V_{wheelDef} = 2 \cdot V_{output} - V_{wheel} , \text{ where } V_{wheel} \text{ is a wheel speed of another driven wheel.}$$

47. (New) The computer program of claim 35, wherein the motor vehicle has all-wheel drive, and the speed variable describing the speed of the at least one driven wheel is determined according to the equation of:

$$V_{wheelDef} = 4 \cdot V_{output} - \sum_{i=1}^3 V_{wheel_i} .$$

48. (New) The computer program of claim 35, wherein the motor vehicle has one of front-wheel drive and rear-wheel drive, and the speed variable describing the speed for the at least one driven wheel is determined according to the equation of:

$$V_{wheelDef} = 2 \cdot V_{output} - V_{wheel} , \text{ where } V_{wheel} \text{ is a wheel speed of another driven wheel.}$$

49. (New) The computer program of claim 35, wherein the computer program is stored at at least one of a memory element and a flash memory.

50. (New) The computer program of claim 36, wherein the computer program is stored at at least one of a memory element and a flash memory.

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51. (New) The computer program of claim 37, wherein the computer program is stored at at least one of a memory element and a flash memory.

52. (New) The computer program of claim 33, wherein the computer program is stored at at least one of a memory element and a flash memory.
